



IN THE U.S. PATENT AND TRADEMARK OFFICE

17

In re Application of

TI-15767A.1

Gerard Chauvel, et al.

Art Unit: 2186

Serial No.: 09/606,057

Examiner: Tran

Filed: 06/28/2000

Conf. No.: 8397

For: MULTIPLE PROCESSOR CELLULAR RADIO

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APPEAL BRIEF TRANSMITTAL FORM

Assistant Commissioner for Patents
Washington, DC 20231

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Elizabeth Austin
Elizabeth Austin

12/18/2002
Date

Dear Sir:

Transmitted herewith in triplicate is an Appellant's Brief in the above-identified application.

Charge any additional fees, or credit overpayment to the deposit account of Texas Instruments Incorporated, Account No. 20-0668. An original and two copies of this sheet are enclosed.

Respectfully submitted,

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APPELLANTS' BRIEF

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In support of their appeal of the Final Rejection of claims in the above-referenced application, Appellants respectfully submits herein their Brief.

I. REAL PARTY IN INTEREST

Texas Instruments Incorporated is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

An Appeal was filed in related application (08/890,894) on December 10, 2002.

III. STATUS OF CLAIMS

Claims 6, 8, 10 and 12-21 are pending. Claims 6, 8, 10 and 12-21 are on appeal.
Claims 6, 8, 10 and 12-21 are reproduced in the Appendix to Appellants' Brief filed herewith.

IV. STATUS OF AMENDMENTS

All amendments have been entered.

V. SUMMARY OF THE INVENTION

The invention comprises a cellular radio (see fig. 2) comprising a first processor (5), a second processor (6) coupled to the first processor and a third processor (7) coupled to the first processor. In one embodiment of the invention, main processor (5) consists of a dedicated digital processor DSP. It effects both the management of the relevant application and the vocoder part. The protocol processing part is carried out by a dedicated processor (6) adapted to bit processing. The modem part of the system which requires large computational power oriented towards vector processing is embodied in a dedicated processor (7) of the array processor type.

VI. ISSUES

1) Are Claims 6, 8, 10, 13-14, 16-17, and 19 patentable under 35 U.S.C. 103(a) over Paneth et al., U.S. Patent No. 6,282,180 B1, (hereinafter Paneth), and further in view of Barnes et al., U.S. Patent No. 4,829,554, (hereinafter Barnes)?

2) Are Claims 16 and 17 patentable under 35 U.S.C. 103(a) over Paneth et al., U.S. Patent No. 6,282,180 B1, (hereinafter Paneth), and further in view of Barnes et al., U.S. Patent No. 4,829,554, (hereinafter Barnes), and further in view of Claesson et al., a Multi-DSP implementation of a Broad-Band Adaptive Beamformer for Use in a Hands-Free Mobile Radio Telephone, pages 194-200, 02/1991 (hereinafter Claesson)?

3) Are Claims 12, 15, 18, and 20-21 patentable under 35 U.S.C. 103(a) over Paneth et al., U.S. Patent No. 6,282,180 B1, (hereinafter Paneth), and further in view of Barnes et al., U.S. Patent No. 4,829,554, (hereinafter Barnes), and further in view of Mano, Computer System Architecture, Prentice-Hall Inc., pages 282-284, 1982 (hereinafter Mano)?

4) Is Claim 18 patentable under 35 U.S.C. 103(a) over Paneth et al., U.S. Patent No. 6,282,180 B1, (hereinafter Paneth), and further in view of Barnes et al., U.S. Patent No. 4,829,554, (hereinafter Barnes), and further in view of Mano, Computer System Architecture, Prentice-Hall Inc., pages 282-284, 1982 (hereinafter Mano), and further in view of Mano, Computer System Architecture, Prentice-Hall Inc., pages 282-284, 1982 (hereinafter Mano)?

VII. GROUPING OF CLAIMS

Claims 6, 8, 10 and 12-21 stand separately. The reason for the allowability of each claim is argued separately in the body of the Appeal.

VIII. ARGUMENT

The Rejection

Claims 6, 8, 10, 13-14, 16-17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paneth et al., U.S. Patent No. 6,282,180 B1, (hereinafter Paneth), and further in view of Barnes et al., U.S. patent No. 4,829,554, (hereinafter Barnes).

As per claim 6, Paneth teaches the invention substantially as claimed, a radio, comprising: a first processor being the main processor of the radio (e.g., fig. 2, el. 24 or 18 or 20 or fig. 3, el. 27 or el. 28 or 29; and col. 8, line 54 and et seq.); a second processor coupled to the first processor wherein said second processor performs protocol processing (e.g., fig. 2, el. 18 or fig. 3, el. 29; and col. 8, lines 22-24); a third processor coupled to the first processor wherein the third processor performs signal processing on vectors processing (e.g., fig. 3, el. 33 or 30a or fig. 25, el. 154; col. 71, line 64 and et seq.). Paneth does not explicitly show the use of cellular. Barnes, e.g., abstract, lines 1-4, is shown as an example that a cellular radio being well known in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a cellular radio to the system of Paneth because it

would allow distribution of many of the control functions to cell stations associated with cells; thereby, monitoring and voice communication functions provides both security from interrupted service and significant reduced costs.

As per claim 8, 10, 13, and 16, Paneth teaches wherein said first processor performs management and vocoder signal processing (e.g., fig. 2, el. 24 or 16 of 18 or 20 or fig. 3, el. 27 or 28 or 29; col. 7, line 63 and et seq. or col. 41, line 31); wherein the second processor is a dedicated processor adapted to bit processing (e.g., fig. 2, el. 24 or 16 or 18 or 20 or fig. 3, el. 27 or 28 or 29 or fig. 25, el. 154; col. 17, line 40 and et seq.); wherein the three processors operate in parallel (e.g., abstract, line 1 and et seq.); and wherein the first processor is a DSP (e.g., col. 42, lines 53-60).

As per claim 14, Paneth teaches the invention substantially as claimed, a radio, comprising: a first processor performing management and vocoder signal processing (e.g., fig. 2, el. 24 or 17 or 20 or fig. 3, el. 28 or 29; col. 7, line 63 and et seq. or col. 41, line 31); a second processor coupled to the first processor wherein said second processor performs protocol processing (e.g., fig. 2, el. 18 or fig. 3, el. 29; and col. 8, lines 22-24); a third processor coupled to the first processor wherein the third processor performs signal processing on vectors (e.g., fig. 3, el. 33 or 30a or fig. 25, el. 154; col. 71, line 64 and et seq.). Paneth does not explicitly show the use of cellular. Barnes, e.g., abstract, lines 1-4, is shown as an example that a cellular radio being well known in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a cellular radio to the system of Paneth because it would allow distribution of many of the control functions to

cell stations associated with cells; thereby, monitoring and voice communication functions provides both security from interrupted service and significant reduced costs.

As per claims 17 and 19, Paneth teaches wherein the first processor is a DSP (e.g., col. 42, lines 53-60); wherein the second processor is a dedicated processor adapted to bit processing (e.g., fig. 2, el. 24 or 16 or 18 or 20 or fig. 3, el. 27 or 28 or 29 or fig. 25, el. 154; col. 17, line 40 and et seq.).

Claim 6 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Paneth et al., U.S. Patent No. 6,282,180 B1, (hereinafter Paneth), and in view of Barnes et al., U.S. Patent No. 4,829,554 , (hereinafter Barnes), and further in view of Claesson et al., a Multi-DSP implementation of a Broad-Band Adaptive Beamformer for Use in a Hands-Free Mobile Radio Telephone, pages 194-200, 02/1991 (hereinafter Claesson).

As per claim 16, Paneth teaches the first processor being the main processor of the radio (e.g., fig.2, el. 24 or 18 or 20 or fig. 3, el. 27 or 29; and col. 8, line 54 and et seq.)> Paneth does not explicitly show the above processor being a DSP. Claesson shows the use of a DSP (e.g., col. 2, page 194 to col. 1, page 195) in a radio system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Claesson into the combines system of Paneth and Barnes because it would allow a highest performance, available in various forms and performance levels from all major semiconductor manufacturers, increase execution speed and keep the cost reasonable, as taught by Claesson (e.g., col. 2, page 194 to col. 1, page 195).

As per claim 17, Paneth teaches the first processor performing management and vocoder signal processing (e.g., fig. 2, el. 24 or 20 or fig. 3, el. 29; col. 7, line 63 and et seq. or col. 41, line 31). Paneth does not explicitly show the above processor being a DSP. Claesson shows the use of a DSP (e.g., col. 2, page 194 to col. 1, page 195) in a radio system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Claesson into the combines system of Paneth and Barnes because it would allow a highest performance, available in various forms and performance levels from all major semiconductor manufacturers, increase execution speed and keep the cost reasonable, as taught by Claesson (e.g., col. 2, page 194 to col. 1, page 195).

Claim 12, 15, 18, and 20-21 are rejected under 35 U.S.C. 1039a) as being unpatentable over Paneth et al., U.S. patent No. 6,282,180 B1, (hereinafter Paneth), in view of Barnes et al., U.S. Patent No. 4,829,554, (hereinafter Barnes), and further in view of Mano, Computer System Architecture, Prentice-Hall Inc., pages 282-284, 1982 (hereinafter Mano).

As per claims 12 and 21, Paneth does not explicitly show the use of an array processor. Mano as an example shows that both the concept and advantages of having a processor being an array processor are well known and expected in the art (page 282). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Mano with the combined system of Paneth and Barnes because it would provide for parallel computations on large arrays, thereby increasing system computation power.

As per claim 15, Paneth teaches the invention substantially as claimed, a radio, comprising: a first processor performing management and vocoder signal processing (e.g., fig. 2, el. 24 or 17 or 20 or fig. 3, el. 28 or 29; col. 7, line 63 and et seq. or col. 41, line 31); a second processor coupled to the first processor wherein said second processor performs protocol processing (e.g., fig. 2, el. 18 or fig. 3, el. 29; and col. 8, lines 22-24); a third processor coupled to the first processor wherein the third processor performs signal processing (e.g., fig. 3, el. 33 or 30a or fig. 25, el. 154; col. 71, line 64 and et seq.). Paneth does not explicitly show the use of cellular. Barnes, e.g., abstract, lines 1-4, is shown as an example that a cellular radio being well known in the art. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a cellular radio to the system of Paneth because it would allow distribution of many of the control functions to cell stations associated with cells; thereby, monitoring and voice communication functions provides both security from interrupted service and significant reduced costs. Paneth does not explicitly show the use of an array processor. Mano as an example shows that both the concept and advantages of having a processor being an array processor are well known and expected in the art (page 282). It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Mano with the combined system of Paneth and Barnes because it would provide for parallel computations on large arrays, thereby increasing system computation power.

As per claims 18 and 20, Paneth teaches wherein the first processor is a DSP (e.g., col. 42, lines 53-60); wherein the second processor is a dedicated processor adapted to bit

processing (e.g., fig. 2, el. 24 or 16 or 18 or 20 or fig. 3, el. 27 or 28 or 29 or fig. 25, el. 154; col. 17, line 40 and et seq.).

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Paneth et al., U.S. Patent No. 6,282,180 B1, (hereinafter Paneth), in view of Barnes et al., U.S. Patent No. 4,829,554, (hereinafter Barnes), further in view of Mano, Computer System Architecture, Prentice-Hall Inc., pages 282-284, 1982 (hereinafter Mano), and further in view of Claesson.

As per claim 18, Paneth teaches the first processor performing management and vocoder signal processing (e.g., fig. 2, el. 24 or 20 or fig. 3, el. 29; col. 7, line 63 and et seq. or col. 41, line 31). Paneth does not explicitly show the above processor being a DSP. Claesson shows the use of a DSP (e.g., col. 2, page 194 to col. 1, page 195) in a radio system. It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teaching of Claesson into the combines system of Paneth and Barnes because it would allow a highest performance, available in various forms and performance levels from all major semiconductor manufacturers, increase execution speed and keep the cost reasonable, as taught by Claesson (e.g., col. 2, page 194 to col. 1, page 195).

APPELLANTS' ARGUMENT

1) Claims 6, 8, 10, 13-14, 16-17, and 19 are patentable under 35 U.S.C. 103(a) over Paneth et al., U.S. Patent No. 6,282,180 B1, (hereinafter Paneth), and further in view of Barnes et al., U.S. Patent No. 4,829,554, (hereinafter Barnes), as set forth below.

Appellants respectfully point out that, "all words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Independent Claim 6 requires and positively recites, a cellular radio, comprising: "a first processor, said first processor **being the main processor of the cellular radio**", "a second processor coupled to said first processor, **said second processor performing protocol processing**" and "a third processor coupled to said first processor, **said third processor performing signal processing on vectors**".

Independent Claim 14 requires and positively recites, a cellular radio, comprising: "a first processor **for performing management and vocoder signal processing**", "a second processor coupled to said first processor, **said second processor performing protocol processing**" and "a third processor coupled to said first processor, **said third processor performing signal processing on vectors**".

In contrast, Paneth discloses a base station in Fig. 2 and a subscriber station in Fig. 3. While Paneth discloses that remote connection processor (RPU) 20 is a processor, it fails to teach or suggest that processor 20 is the **main processor** of the base station or of any cellular radio, as required by Claim 6. Even if it were to be so, the vocoder function is performed by the codecs in VCU 17 – NOT in RPU 20. Accordingly, Paneth's Fig. 2 fails to teach or suggest wherein the first processor **performs management and vocoder signal processing** as required by Claim 14.

Paneth's Fig. 3 discloses the subscriber station. Element 27 is a subscriber terminal. Element 28 is a voice codec unit. Element 29 is a channel control unit. The Examiner has not identified the specific processors within these elements. Appellants specifically asked the Examiner to specifically point out the respective processors and the functionality of the processors within Paneth – the Examiner failed to do so. Accordingly, Paneth's Fig. 3 fails to teach or suggest, a cellular radio, comprising: “a first processor, said first processor **being the main processor of the cellular radio**”, “a second processor coupled to said first processor, **said second processor performing protocol processing**” and “a third processor coupled to said first processor, **said third processor performing signal processing on vectors**”, as required by Claim 6, or a cellular radio, comprising: “a first processor **for performing management and vocoder signal processing**”, “a second processor coupled to said first processor, **said second processor performing protocol processing**” and “a third processor coupled to said first processor, **said third processor performing signal processing on vectors**”, as required by Claim 14.

Barnes discloses a “cellular mobile telephone system” – not just a cellular radio (abstract, line 1 and et seq.). Figure 5 is a functional block diagram of a redundant control of central station 20 (see Brief description of the drawings, col. 15, line 1 – col. 16, line 64). Signal lines 24 couple wireline telephone system 22 to central station 20, and data line 28a and voice circuit 30A couple central control station 20 to cell station 26 (Fig. 1). No matter how you view central control station 20, it is NOT a “cellular radio”, as required by Claims 6 and 14.

Barnes' Figure 16 discloses one embodiment of one RIM of cell station 26. Being there are multiple RIMs in cell station 26, there is no way that microprocessor 550 (which is described as a "sub system") or slave microprocessor 558 (which is described as a "slave" to processor 550) is the **main processor** of cell station 26, as required by Claim 6. Further, since Barnes discloses that "the transmit audio processing circuit 578 and the receive audio processing circuit 576, under the control of the audio control and interface circuit 572 (col. 33, lines 42-49), it is obvious that neither microprocessor 550 or slave microprocessor 558 perform "**management and vocoder signal processing**", as required by Claim 14.

Indeed, Barnes' Figure 24 discloses a functional block diagram of the handset and cradle of mobile unit 32. There are ONLY TWO microcomputers in Figure 24 – microcomputer 320 and microcomputer 350. Claims 6 and 14 both require THREE processors – NOT two. Accordingly, Claims 6 and 14 are not anticipated by any combination of Paneth and Barnes.

The Examiner has already admitted that Paneth does not show the use of cellular (Office Action dated December 20, 2001, page 5, lines 4-6). Appellants fail to see how the above deficiencies of Paneth are overcome by Barnes. Even if, *arguendo*, Barnes discloses a cellular radio system, the above deficiencies of Paneth are not overcome. Moreover, the Examiner has provided no evidence from the prior art that would motivate one of ordinary skill in the art to combine Barnes with Paneth and then re-engineer the resulting combination device, without the improper knowledge provided by Appellants' disclosure. Accordingly,

the 35 U.S.C. 103(a) rejection of independent Claims 6 and 14 over Paneth in view of Barnes is erroneous and must be withdrawn.

Response to Examiner's rebuttal (9) (Office Action dated June 16, 2002, page 8, lines 8 – 11: The Examiner states: "The combination of Paneth and Barnes teaches the first processor being main processor of a cellular radio as stated above in the rejection with respect to claim 6. In particular, Paneth teaches that processor 20 is the main processor of the base station (e.g., col. 8, line 54 and et seq.). Appellants respectfully respond that that Paneth discloses nothing more than that, "the remote-control processor unit (RPU) 20 is the central control processor **which conveys connection data and control messages to the CCU** (col. 8, lines 54-56)". Thus, Paneth does not teach or suggest that RPU 20 is the "main processor of a cellular radio", as required by Claim 6. Further, Appellants point out that the combination of Paneth and Barnes is NOT the prior art. The prior art is Paneth individually and Barnes individually – NOT a combination of Paneth and Barnes, as stated by the Examiner.

Response to Examiner's rebuttal (10) (Office Action dated June 16, 2002, page 8, lines 16– 18. The citations relied upon by the Examiner to show that Paneth teaches a first processor to perform management and vocoder signal processing (e.g., fig. 2, el. 24 or 17 or 20 or fig. 3, el. 28 or 29; col. 7, line 63 and et seq. or col. 41, line 31), do not support the Examiner's argument. Element 24 is a call processor; element 17 is a voice codec unit; element 20 is a remote connection processor; element 28 is a voice codec unit; and element 29 is a channel control unit – nowhere is there any teaching in Paneth that any one of these

elements is a processor that “performs management and vocoder signal processing”, as required by Claim 14. Similarly, (col. 7, line 63 and et seq. or col. 41, line 31), cited by the Examiner, fails to provide any such teaching. The Examiner goes on to argue that el. 20 performs management and vocoder signal processing “by controlling the performance vocoder signal processing, the interconnections between the codecs 16 (e.g., col. 8, lines 56-63). What Paneth actually discloses is the following:

The RPU 20 also communicates with a call processor 24 in the PBX 15 to **control the interconnections between** the codecs 6 and the Telcon trunks accomplished by a switch matrix 25 of the PBX (col. 8, lines 60-63).

Appellants respectfully point out that in Paneth, the vocoder function is performed by the codecs in VCU 17 – NOT in RPU 20. Just because RPU 20 “RPU 20 also communicates with a call processor 24 in the PBX 15 to **control the interconnections between** the codecs 6 and the Telcon trunks accomplished by a switch matrix 25 of the PBX”, does not mean that RPU “performs vocoder signal processing”, as required by Claim 14. Accordingly, Paneth fails to teach or suggest wherein the first processor **performs management and vocoder signal processing** as required by Claim 14.

Response to Examiner’s rebuttal (11) (Office Action dated June 16, 2002, page 9, line 14 – page 10, line 2. Applicants disagree with the Examiner’s position that Appellants cannot attack the references individually. Appellants respectfully point out that the Examiner’s combination of Paneth and Barnes is not THE PRIOR ART – the prior art is Paneth individually and Barnes individually. Appellants are entitled to analyze the references individually first, and then in combination to determine what is the prior art. In Graham v. John Deere Co., 148 USPQ 459 (U.S. Sup. Ct. 1966), the U.S. Supreme Court clearly and

explicitly compared Scoggin's invention first to the Lohse patent individually, thereafter to the Mellon patent individually, and thereafter to the Livingstone patent individually. 148 USPQ 459, 472. Such an individual assessment of the prior art references is considered well-settled law in view of the fact that the obviousness statute, 35 USC 103, "refers to the difference between the subject matter sought to be patented and the prior art, meaning what was known before as described in section 102". Graham, 148 USPQ 459, 465-466 (quoting the Senate and House Reports, S. Rep. No. 1979, 82nd Cong., 2d Sess. (1952); H.R. Rep. No. 1923, 82d Cong., 2d Sess. (1952)). Thus, Graham requires that each reference be assessed individually to ascertain how it differs from the claims. This should be clear by realizing that 35 USC 103 has as its predicate 35 USC 102. If the factual inquiry of ascertaining the differences between the prior art and the claims results in a finding that there are no differences between the prior art (e.g., any single reference) and the claims, then a rejection under 35 U.S.C. 102 would be proper without any necessity of a rejection under 35 USC 103. Thus, when ascertaining differences between the prior art and the claims, each reference is to be taken individually as under 35 USC 102.

Further, Appellants' arguments do in fact consider the effect of combining the references. In re Sernaker, 217 USPQ 1 (Fed. Cir. 1983), states well the test for determining whether the ascertained differences between the prior art and the claims are such that the claimed subject matter as a whole would have been obvious: "whether a combination of the teachings of all or any of the references would have suggested (expressly or by implication) the possibility of achieving further improvement by combining such teachings along the line of the invention". Thus, the teachings of the prior art are to be evaluated as a combined

whole, but after the differences between the prior art and the claims have been ascertained. Both In re Keller, 208 USPQ2d 871, 880-881, and In re Merck & Co., 800 F.2c 1091, 231 USPQ 375 (Fed. Cir. 1986), relied on by the Examiner, assess the combined teachings of the prior art only after the differences between the prior art and claims had been determined.

Regarding the Examiner's comments on page 10, lines 3-7, Appellants respond that el. 27 is a "subscriber terminal unit" (col. 9, lines 19-21). Nowhere does Paneth teach or suggest that STU 20 is a "processor" or that it is the "main processor" of the cellular radio. Accordingly, the Examiner's determination is supposition not supported by fact.

Response to Examiner's rebuttal (12) (Office Action dated June 16, 2002, page 10, lines 12-19). Appellants disagree with the Examiner's position that Appellants cannot attack the references individually. Appellants respectfully point out that the Examiner's combination of Paneth and Barnes is not THE PRIOR ART – the prior art is Paneth individually and Barnes individually. Appellants are entitled to analyze the references individually first, and then in combination to determine what is the prior art. In Graham v. John Deere Co., 148 USPQ 459 (U.S. Sup. Ct. 1966), the U.S. Supreme Court clearly and explicitly compared Scoggin's invention first to the Lohse patent individually, thereafter to the Mellon patent individually, and thereafter to the Livingstone patent individually. 148 USPQ 459, 472. Such an individual assessment of the prior art references is considered well-settled law in view of the fact that the obviousness statute, 35 USC 103, "refers to the difference between the subject matter sought to be patented and the prior art, meaning what was known before as described in section 102". Graham, 148 USPQ 459, 465-466 (quoting

the Senate and House Reports, S. Rep. No. 1979, 82nd Cong., 2d Sess. (1952); H.R. Rep. No. 1923, 82d Cong., 2d Sess. (1952)). Thus, Graham requires that each reference be assessed individually to ascertain how it differs from the claims. This should be clear by realizing that 35 USC 103 has as its predicate 35 USC 102. If the factual inquiry of ascertaining the differences between the prior art and the claims results in a finding that there are no differences between the prior art (e.g., any single reference) and the claims, then a rejection under 35 U.S.C. 102 would be proper without any necessity of a rejection under 35 USC 103. Thus, when ascertaining differences between the prior art and the claims, each reference is to be taken individually as under 35 USC 102.

Further, Appellants' arguments do in fact consider the effect of combining the references. In re Sernaker, 217 USPQ 1 (Fed. Cir. 1983), states well the test for determining whether the ascertained differences between the prior art and the claims are such that the claimed subject matter as a whole would have been obvious: "whether a combination of the teachings of all or any of the references would have suggested (expressly or by implication) the possibility of achieving further improvement by combining such teachings along the line of the invention". Thus, the teachings of the prior art are to be evaluated as a combined whole, but after the differences between the prior art and the claims have been ascertained. Both In re Keller, 208 USPQ2d 871, 880-881, and In re Merck & Co., 800 F.2c 1091, 231 USPQ 375 (Fed. Cir. 1986), relied on by the Examiner, assess the combined teachings of the prior art only after the differences between the prior art and claims had been determined.

Regarding the Examiner's comments on page 10, line 20 – page 11, line 4, Appellants respond that el. 27 is a “subscriber terminal unit” (col. 9, lines 19-21) and el. 28 is a “voice codec unit” (col. 9, line 25). Nowhere does Paneth teach or suggest that el. 27 and el. 28 are “processors” or that such “processors” perform management AND vocoder signal processing, as suggested by the Examiner. The Examiner's determination is supposition not supported by fact. Accordingly, Paneth fails to teach or suggest wherein the first processor **performs management and vocoder signal processing** as required by Claim 14.

In proceedings before the Patent and Trademark Office, “the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art”. In re Fritch, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992) (citing In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). “The Examiner can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references”, In re Fritch, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992)(citing In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988)(citing In re Lalu, 747 F.2d 703, 705, 223 USPQ 1257, 1258 (Fed. Cir. 1988)). The Examiner in the present case has not met his burden of presenting a prima facie case of the obviousness of Claims 6 and 14 over Paneth in view of Barnes. Indeed, the Examiner has not pointed to any teaching in the art that would have motivated one having ordinary skill in the art to combine the two references – much less re-engineer the resulting combination to arrive at the claimed invention.

Even if the cited art discloses components of the device in issue, case law holds that it is insufficient that the prior art discloses the components of the device in issue, either separately or used in other combination; there must be some teaching, suggestion, or incentive to make the combination made by the inventor. Northern Telecom, Inc. v. Datapoint Corp., 908 F.2d 931, 934, 15 USPQ2d 1321, 1323 (Fed. Cir. 1990). Moreover, "obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Although couched in terms of combining teachings found in the prior art, the same inquiry must be carried out in the context of a purported obvious "modification" of the prior art. The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. In re Laskowski, 871 F.2d 115, 10 USPQ2d 1397 (Fed. Cir. 1989); In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984).

Claims 8, 10, 13, 16, 17 and 19 stand allowable as depending from allowable claims and including further limitations not taught or suggested by the references of record.

Claim 8 further defines the cellular radio of Claim 6, wherein said first processor performs management and vocoder signal processing. In addition to the arguments set forth in support of the allowability of Claim 6, Claim 8 is allowable for further limiting the first processor to perform both "management and vocoder signal processing". Appellants have shown in previous arguments that there is no teaching in either Paneth or Barnes that teaches a processor that performs both "management and vocoder signal processing", as required by

Claim 8. Accordingly, Paneth and Barnes fail to teach or suggest this further limitation in combination with the requirements of Claim 6.

Claim 10 further defines the cellular radio of Claim 9, wherein said second processor is a dedicated processor adapted to bit processing. In addition to the arguments set forth in support of the allowability of Claim 8, Claim 10 is allowable for further limiting the second processor to being “a dedicated processor adapted to bit processing”. Appellants have shown in previous arguments that there is no teaching in either Paneth or Barnes that teaches that the second processor is specifically limited to being “a dedicated processor adapted to bit processing”. Accordingly, Paneth and Barnes fail to teach or suggest this further limitation in combination with the requirements of Claim 9.

Claim 13 further defines the cellular radio of Claim 6, wherein said first, second and third processors operate in parallel. In addition to the arguments set forth in support of the allowability of Claim 6, Claim 13 is allowable by further limiting “wherein said first, second and third processors operate in parallel”. Paneth and Barnes fail to teach or suggest this further limitation in combination with the requirements of Claim 6.

Claim 16 further defines the cellular radio of Claim 6, wherein said first processor is a digital signal processor (DSP). In addition to the arguments set forth in support of the allowability of Claim 6, Claim 16 is allowable by further limiting “wherein said first processor is a digital signal processor (DSP)”. Paneth and Barnes fail to teach or suggest this further limitation in combination with the requirements of Claim 6.

Claim 17 further defines the cellular radio of Claim 14, wherein said first processor is a digital signal processor (DSP). In addition to the arguments set forth in support of the allowability of Claim 14, Claim 17 is allowable by further limiting “wherein said first processor is a digital signal processor (DSP)”. Paneth and Barnes fail to teach or suggest this further limitation in combination with the requirements of Claim 14.

Claim 19 further defines the cellular radio of Claim 14, wherein said second processor is a dedicated processor adapted to bit processing. In addition to the arguments set forth in support of the allowability of Claim 14, Claim 19 is allowable by further limiting “wherein said second processor is a dedicated processor adapted to bit processing”. Paneth and Barnes fail to teach or suggest this further limitation in combination with the requirements of Claim 14.

2) Claims 16 and 17 are patentable under 35 U.S.C. 103(a) over Paneth et al., U.S. Patent No. 6,282,180 B1, (hereinafter Paneth), and further in view of Barnes et al., U.S. Patent No. 4,829,554, (hereinafter Barnes), and further in view of Claesson et al., a Multi-DSP implementation of a Broad-Band Adaptive Beamformer for Use in a Hands-Free Mobile Radio Telephone, pages 194-200, 02/1991 (hereinafter Claesson), as set forth below.

Claim 16 further defines the cellular radio of Claim 6, wherein said first processor is a digital signal processor (DSP). The Examiner admits that Paneth does not show the main processor of the radio being a DSP (Office Action dated June 18, 2002, page 4, lines 18-20).

The Examiner relies upon Claesson for such teaching. Appellants believe the Examiner's determination is erroneous, as set forth below.

In contrast, to Appellants' cellular radio, the Claesson reference discloses the DSP900 which is a multiprocessor computer aimed for digital signal processing (DSP) in laboratory environments (page 195, col. 1, lines 7 & 8) - NOT a "cellular radio". The DSP900 system is enclosed in a 19-in standard frame DIN 41612 and has space for up to 8 complete subcomputer cards, a global memory, a PC-interface and up to 20 I/O-units, see Fig. 2 (page 195, col. 1, lines 8-11). There is no evidence whatsoever in Claesson that the DSP900 system is a cellular radio or has cellular radio functionality. Accordingly, the DSP900 is a multiprocessor computer having no cellular radio functionality = NOT a cellular radio. While Applicants may agree that Claesson discloses a five-microphone Griffiths-Jim array that Claesson discloses as being "intended for use in a hands-free mobile radio telephone" (page 201, col. 1, lines 12-14), Claesson fails to disclose the five-microphone Griffiths-Jim array in a cellular radio. Claesson similarly fails to disclose any cellular phone - let alone a cellular phone with three processors. The Examiner even admits this with the statement that, "Claesson does not show the use of cellular" (Office Action dated December 20, 2001, page 7, line 2). There is no teaching whatsoever in Claesson itself, or in Paneth and/or Barnes, that suggests to one having ordinary skill in the art at the time of Applicants invention, to modify the first processor in Paneth to incorporate Claesson's use of a DSP to "allow a highest performance, available in various forms and performance level from all major semiconductor manufacturers, to increase execution and keep the cost reasonable" (Office Action dated

December 20, 2001, page 5, lines 3-6). The examiner's determination is supposition not supported by fact.

Applicants further submit that it would not have been obvious for one having ordinary skill in the art at the time of Applicants' invention to have re-engineered the DSP900 which is a multiprocessor computer aimed for digital signal processing (DSP) in laboratory environments (page 195, col. 1, lines 7 & 8) that is enclosed in a 19-in standard frame DIN 41612 and has space for up to 8 complete subcomputer cards, a global memory, a PC-interface and up to 20 I/O-units, see Fig. 2 (page 195, col. 1, lines 8-11), to instead be a **cellular radio**, even with the teaching of Barnes, without the improper hindsight provided by Appellants' disclosure.

Claim 17 further defines the cellular radio of Claim 14, wherein said first processor is a digital signal processor (DSP). The Examiner admits that Paneth does not show the main processor of the radio being a DSP (Office Action dated June 18, 2002, page 5, lines 9-10). The Examiner relies upon Claesson for such teaching. Appellants believe the Examiner's determination is erroneous, as set forth below.

In contrast, to Appellants' cellular radio, the Claesson reference discloses the DSP900 which is a multiprocessor computer aimed for digital signal processing (DSP) in laboratory environments (page 195, col. 1, lines 7 & 8) - NOT a "cellular radio". The DSP900 system is enclosed in a 19-in standard frame DIN 41612 and has space for up to 8 complete subcomputer cards, a global memory, a PC-interface and up to 20 I/O-units, see Fig. 2 (page

195, col. 1, lines 8-11). There is no evidence whatsoever in Claesson that the DSP900 system is a cellular radio or has cellular radio functionality. Accordingly, the DSP900 is a multiprocessor computer having no cellular radio functionality = NOT a cellular radio. While Appellants may agree that Claesson discloses a five-microphone Griffiths-Jim array that Claesson discloses as being "intended for use in a hands-free mobile radio telephone" (page 201, col. 1, lines 12-14), Claesson fails to disclose the five-microphone Griffiths-Jim array in a cellular radio. Claesson similarly fails to disclose any cellular phone - let alone a cellular phone with three processors. The Examiner even admits this with the statement that, "Claesson does not show the use of cellular" (Office Action dated December 20, 2001, page 7, line 2). There is no teaching whatsoever in Claesson itself, or in Paneth and/or Barnes, that suggests to one having ordinary skill in the art at the time of Appellants invention, to modify the first processor in Paneth to incorporate Claesson's use of a DSP to "allow a highest performance, available in various forms and performance level from all major semiconductor manufacturers, to increase execution and keep the cost reasonable" (Office Action dated December 20, 2001, page 5, lines 3-6). The examiner's determination is supposition not supported by fact.

3) Claims 12, 15, 18, and 20-21 are patentable under 35 U.S.C. 103(a) over Paneth et al., U.S. Patent No. 6,282,180 B1, (hereinafter Paneth), and further in view of Barnes et al., U.S. Patent No. 4,829,554, (hereinafter Barnes), and further in view of Mano, Computer System Architecture, Prentice-Hall Inc., pages 282-284, 1982 (hereinafter Mano), as set forth below.

Independent Claim 15 requires and positively recites, a **cellular radio**, comprising: “a first processor **for performing management and vocoder signal processing**”, “a second processor coupled to said first processor, **said second processor performing protocol processing**” and “a third processor coupled to said first processor, **said third processor being a dedicated processor of the array type**”.

In contrast, Paneth discloses a base station in Fig. 2 and a subscriber station in Fig. 3. While Paneth discloses that remote connection processor (RPU) 20 is a processor, it fails to teach or suggest that processor 20 **performs management and vocoder signal processing** and “a third processor coupled to said first processor, **said third processor being a dedicated processor of the array type**”, as required by Claim 15.

Paneth's Fig. 3 discloses the subscriber station. Element 27 is a subscriber terminal. Element 28 is a voice codec unit. Element 29 is a channel control unit. The Examiner has not identified the specific processors within these elements. Appellants specifically asked the Examiner to specifically point out the respective processors and the functionality of the processors within Paneth – the Examiner failed to do so. The Examiner has already admitted that Paneth does not show the use of cellular (Office Action dated December 20, 2001, page 5, lines 4-6). The Examiner further admits that Paneth does not show the use of an array processor (Office Action dated June 18, 2002, page 6, lines 1-2). Accordingly, Paneth's Fig. 3 fails to teach or suggest, a cellular radio, comprising: “a first processor **for performing management and vocoder signal processing**”, “a second processor coupled to said first processor, **said second processor performing protocol processing**” and “a third processor

coupled to said first processor, **said third processor being a dedicated processor of the array type**", as required by Claim 15.

Barnes discloses a "cellular mobile telephone system" – not just a cellular radio (abstract, line 1 and et seq.). Figure 5 is a functional block diagram of a redundant control of central station 20 (see Brief description of the drawings, col. 15, line 1 – col. 16, line 64). Signal lines 24 couple wireline telephone system 22 to central station 20, and data line 28a and voice circuit 30A couple central control station 20 to cell station 26 (Fig. 1). No matter how you view central control station 20, it is NOT a "cellular radio", as required by Claim 15.

Barnes' Figure 16 discloses one embodiment of one RIM of cell station 26. Being there are multiple RIMs in cell station 26, there is no way that microprocessor 550 (which is described as a "sub system") or slave microprocessor 558 (which is described as a "slave" to processor 550) are the **main processor** of cell station 26, as required by Claim 6. Further, since Barnes discloses that "the transmit audio processing circuit 578 and the receive audio processing circuit 576, under the control of the audio control and interface circuit 572 (col. 33, lines 42-49), it is obvious that neither microprocessor 550 or slave microprocessor 558 perform "**management and vocoder signal processing**", as required by Claim 15.

Indeed, Barnes' Figure 24 discloses a functional block diagram of the handset and cradle of mobile unit 32. There are ONLY TWO microcomputers in Figure 24 – microcomputer 320 and microcomputer 350. Claims 6 and 14 both require THREE

processors – NOT two. Accordingly, Claim 15 is not anticipated by any combination of Paneth and Barnes.

Appellants fail to see how the above deficiencies of Paneth are overcome by Barnes. Even if, *arguendo*, Barnes discloses a cellular radio system, the above deficiencies of Paneth are not overcome. Moreover, the Examiner has provided no evidence from the prior art that would motivate one of ordinary skill in the art to combine Barnes with Paneth and then re-engineer the resulting combination device, without the improper knowledge provided by Appellants' disclosure.

Regarding the additional limitation of Claim 15, that **“said third processor being a dedicated processor of the array type”**, the Examiner relies upon Mano, as showing both “the concept and advantages of having a processor being an array processor are well known and expected in the art at the time the invention was made – which would provide for parallel computation on large arrays, thereby increasing system computation power” (Office Action dated June 18, 2002, page 7, lines 3-5). Even assuming, *arguendo*, that Mano discloses that “the concept and advantages of having a processor being an array processor are well known”, it fails to teach or suggest the previously identified deficiencies of Paneth, Barnes and any combination of Paneth and Barnes. Moreover, there is no teaching or suggestion in any of the references that would have suggested to one of ordinary skill in the art at the time of the invention to combine the three references, then modify the resulting device so that it anticipates, **“a first processor for performing management and vocoder signal processing”**, **“a second processor coupled to said first processor, said second processor**

performing protocol processing” and “a third processor coupled to said first processor, said third processor being a dedicated processor of the array type”, as required by Claim 15, without the improper hindsight provided by Appellants disclosure.

Claim 12 further defines the cellular radio of Claim 6, wherein said third processor is a dedicated processor of the array processor type. In addition to the arguments set forth in support of the allowability of Claim 6, one of ordinary skill in the art would not have been motivated to add Mano’s “array processor” to the combination of Paneth and Barnes , in order to provide for parallel computation on large arrays, since neither reference describes itself as being applicable to large arrays. Claim 12 is allowable for further limiting “wherein said third processor is a dedicated processor of the array processor type”, since it is only through hindsight reconstruction that one could arrive at any combination of Paneth, Barnes and Mano. Accordingly, the combination of Paneth, Barnes and Mano fails to teach or suggest this further limitation in combination with the requirements of Claim 6.

Claim 18 further defines the cellular radio of Claim 15, wherein said first processor is a digital signal processor (DSP). In addition to the arguments set forth in support of the allowability of Claim 15, Claim 18 is allowable by further limiting “wherein said first processor is a digital signal processor (DSP)”. The Examiner admits that Paneth does not show the main processor of the radio being a DSP (Office Action dated June 18, 2002, page 4, lines 18-20). The Examiner does, however, argue that Paneth discloses there the first processor is a DSP (Office Action dated June 18, 2002, page 7, lines 6-7). In any event,

Paneth and Barnes fail to teach or suggest this further limitation in combination with the requirements of Claim 14.

Claim 20 further defines the cellular radio of Claim 15, wherein said second processor is a dedicated processor adapted to bit processing. In addition to the arguments set forth in support of the allowability of Claim 15, Claim 20 is allowable by further limiting “wherein said second processor is a dedicated processor adapted to bit processing”. Paneth and Barnes fail to teach or suggest this further limitation in combination with the requirements of Claim 15.

Claim 21 further defines the cellular radio of Claim 14, wherein said third processor is a dedicated processor of the array type. In addition to the arguments set forth in support of the allowability of Claim 14, one of ordinary skill in the art would not have been motivated to add Mano’s “array processor” to the combination of Paneth and Barnes, in order to provide for parallel computation on large arrays, since neither reference describes itself as being applicable to large arrays. Claim 21 is allowable for further limiting “wherein said third processor is a dedicated processor of the array processor type”, since it is only through hindsight reconstruction that one could arrive at any combination of Paneth, Barnes and Mano. Accordingly, the combination of Paneth, Barnes and Mano fails to teach or suggest this further limitation in combination with the requirements of Claim 14.

Response to Examiner’s rebuttal (13) (Office Action dated June 16, 2002, page 11, lines 9-16). Appellants disagree with the Examiner’s position that Appellants cannot attack

the references individually. Appellants respectfully point out that the Examiner's combination of Paneth and Barnes is not THE PRIOR ART – the prior art is Paneth individually and Barnes individually. Appellants are entitled to analyze the references individually first, and then in combination to determine what is the prior art. In Graham v. John Deere Co., 148 USPQ 459 (U.S. Sup. Ct. 1966), the U.S. Supreme Court clearly and explicitly compared Scoggin's invention first to the Lohse patent individually, thereafter to the Mellon patent individually, and thereafter to the Livingstone patent individually. 148 USPQ 459, 472. Such an individual assessment of the prior art references is considered well-settled law in view of the fact that the obviousness statute, 35 USC 103, "refers to the difference between the subject matter sought to be patented and the prior art, meaning what was known before as described in section 102". Graham, 148 USPQ 459, 465-466 (quoting the Senate and House Reports, S. Rep. No. 1979, 82nd Cong., 2d Sess. (1952); H.R. Rep. No. 1923, 82d Cong., 2d Sess. (1952)). Thus, Graham requires that each reference be assessed individually to ascertain how it differs from the claims. This should be clear by realizing that 35 USC 103 has as its predicate 35 USC 102. If the factual inquiry of ascertaining the differences between the prior art and the claims results in a finding that there are no differences between the prior art (e.g., any single reference) and the claims, then a rejection under 35 U.S.C. 102 would be proper without any necessity of a rejection under 35 USC 103. Thus, when ascertaining differences between the prior art and the claims, each reference is to be taken individually as under 35 USC 102.

Further, Appellants' arguments do in fact consider the effect of combining the references. In re Sernaker, 217 USPQ 1 (Fed. Cir. 1983), states well the test for determining

whether the ascertained differences between the prior art and the claims are such that the claimed subject matter as a whole would have been obvious: “whether a combination of the teachings of all or any of the references would have suggested (expressly or by implication) the possibility of achieving further improvement by combining such teachings along the line of the invention”. Thus, the teachings of the prior art are to be evaluated as a combined whole, but after the differences between the prior art and the claims have been ascertained. Both In re Keller, 208 USPQ2d 871, 880-881, and In re Merck & Co., 800 F.2c 1091, 231 USPQ 375 (Fed. Cir. 1986), relied on by the Examiner, assess the combined teachings of the prior art only after the differences between the prior art and claims had been determined.

Regarding the Examiner’s comments on page 11, lines 17-20, Appellants respond that el. 27 is a “subscriber terminal unit” (col. 9, lines 19-21) and el. 28 is a “voice codec unit” (col. 9, line 25). Nowhere does Paneth teach or suggest that el. 27 and el. 28 are “processors” or that such “processors” perform management AND vocoder signal processing, as suggested by the Examiner. Further, as stated previously, there is not motivation whatsoever in the cited references that would have led one of ordinary skill in the art at the time of the present invention to combine Mano’s “dedicated processor of the array type” into any combination of Paneth and Barnes, without the improper hindsight provided by the present invention. The Examiner’s determination is supposition not supported by fact. Accordingly, the combination of Paneth, Barnes and Mano fails to teach or suggest wherein “a third processor coupled to said first processor, **said third processor being a dedicated processor of the array type**”, as required by Claim 15,

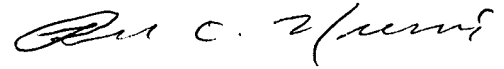
4) Claim 18 is patentable under 35 U.S.C. 103(a) over Paneth et al., U.S. Patent No. 6,282,180 B1, (hereinafter Paneth), and further in view of Barnes et al., U.S. Patent No. 4,829,554, (hereinafter Barnes), and further in view of Mano, Computer System Architecture, Prentice-Hall Inc., pages 282-284, 1982 (hereinafter Mano), and further in view of Mano, Computer System Architecture, Prentice-Hall Inc., pages 282-284, 1982 (hereinafter Mano), as set forth below.

Claim 18 further defines the cellular radio of Claim 15, wherein said first processor is a digital signal processor (DSP). In addition to the arguments set forth in support of the allowability of Claim 15, Claim 18 is allowable by further limiting “wherein said first processor is a digital signal processor (DSP)”. The Examiner admits that Paneth does not show the main processor of the radio being a DSP (Office Action dated June 18, 2002, page 4, lines 18-20). The Examiner does, however, argue that Paneth discloses that the first processor is a DSP (Office Action dated June 18, 2002, page 7, lines 6-7). In any event, Paneth and Barnes fail to teach or suggest this further limitation in combination with the requirements of Claim 14.

Even if, arguendo, Mano were to disclose that a processor can be a DSP, Mano fails to teach or suggest the previously identified deficiencies of Paneth and Barnes in Claim 15. Accordingly, Paneth, Barnes and Mano, alone or in combination, fail to teach or suggest the limitations of Claim 18.

For the above reasons, favorable consideration of the appeal of the Final Rejection in the above-referenced application, and its reversal, are respectfully requested.

Respectfully submitted,



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APPENDIX

CLAIMS ON APPEAL:

6. (amended) A cellular radio, comprising:
 - a first processor, said first processor being the main processor of the cellular radio;
 - a second processor coupled to said first processor, said second processor performing protocol processing; and
 - a third processor coupled to said first processor, said third processor performing signal processing on vectors.
8. The cellular radio of Claim 6, wherein said first processor performs management and vocoder signal processing.
10. (amended) The cellular radio of Claim 6, wherein said second processor is a dedicated processor adapted to bit processing.
12. (amended) The cellular radio of Claim 6, wherein said third processor is a dedicated processor of the array processor type.
13. The cellular radio of Claim 6, wherein said first, second and third processors operate in parallel.
14. A cellular radio, comprising:
 - a first processor for performing management and vocoder signal processing;
 - a second processor coupled to said first processor, said second processor performing protocol processing; and
 - a third processor coupled to said first processor, said third processor performing signal processing on vectors.

15. A cellular radio, comprising:
a first processor for performing management and vocoder signal processing;
a second processor coupled to said first processor, said second processor performing protocol processing; and
a third processor coupled to said first processor, said third processor being a dedicated processor of the array type.

16. The cellular radio of Claim 6, wherein said first processor is a digital signal processor (DSP).

17. The cellular radio of Claim 14, wherein said first processor is a digital signal processor (DSP).

18. The cellular radio of Claim 15, wherein said first processor is a digital signal processor (DSP).

19. The cellular radio of Claim 14, wherein said second processor is a dedicated processor adapted to bit processing.

20. The cellular radio of Claim 15, wherein said second processor is a dedicated processor adapted to bit processing.

21. The cellular radio of Claim 14, wherein said third processor is a dedicated processor of the array type.